

CLAIMS

1. A ceramic multilayer substrate comprising:

a ceramic laminate (10) including a plurality of ceramic layers, having a first main surface (18), and including internal circuit elements disposed in the inside of the laminate;

a resin layer (15) having a bonding surface (19) in contact with the first main surface (18) of the ceramic laminate (10) and a mounting surface (16) opposite to the bonding surface (19);

external electrodes (17), each disposed on the mounting surface (16) of the resin layer (15) and electrically connected to at least one of the internal circuit elements (14) of the ceramic laminate (10); and

a ground electrode (12), a dummy electrode, or capacitor-forming electrode disposed at an interface between the first main surface (18) of the ceramic laminate (10) and the bonding surface (19) of the resin layer (15) or in the inside of the resin layer (15).

2. The ceramic multilayer substrate according to Claim 1, wherein the ground electrode (12), the dummy electrode, or the capacitor-forming electrode comprises a sintered metal integrally baked with the ceramic laminate.

3. A ceramic multilayer substrate comprising:

a ceramic laminate (10) including a plurality of ceramic layers, having a first main surface (18), and including internal circuit elements disposed in the inside of the laminate;

a resin layer (15) having a bonding surface (19) in contact with the first main surface (18) of the ceramic laminate (10) and a mounting surface (16) opposite to the bonding surface (19);

external electrodes (17), each disposed on the mounting surface (16) of the resin layer (15) and electrically connected to at least one of the internal circuit elements (14) of the ceramic laminate (10);

a ground electrode (12) disposed at an interface between the first main surface (18) of the ceramic laminate (10) and the bonding surface (19) of the resin layer (15) or in the inside of the resin layer (15); and

a capacitor-forming electrode (20) facing the ground electrode (12) from the side opposite to the mounting surface (16) so that a capacitor is constructed by the ground electrode (12) and the capacitor-forming electrode (20).

4. The ceramic multilayer substrate according to Claim 1,

comprising a first circuit component (22a, 22b, and 22c) mounted on the first main surface (18) and covered with the resin layer (15), wherein the ground electrode (12), the dummy electrode, or the capacitor-forming electrodes are disposed on the side nearer to the mounting surface (16) than are the first circuit component (22a, 22b, and 22c).

5. The ceramic multilayer substrate according to Claim 4, wherein the first circuit component (22a, 22b, and 22c) is disposed within the region determined by projecting the ground electrode (12), the dummy electrode, or the capacitor-forming electrode on the first main surface (18).

6. The ceramic multilayer substrate according to Claim 1, wherein the electrical connections from the external electrodes (17) to the internal circuit elements (14) are performed through relay electrodes (21) disposed to extend along the first main surface (18).

7. The ceramic multilayer substrate according to Claim 1, wherein the ceramic laminate (10) comprises a second main surface (23) on the opposite side to the first main surface (18), and a second circuit component (13a, 13b, and 13c) is mounted on the second main surface (23).

8. The ceramic multilayer substrate according to Claim 7, wherein a conductive case (24) is disposed on the second main surface (23) to cover the second circuit component (13a, 13b, and 13c).

9. The ceramic multilayer substrate according to Claim 7, wherein the second circuit component (13a, 13b, and 13c) on the second main surface (23) is covered with a molded resin layer (25).